



# The North Dakota Seed Journal

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Newsletter of the North Dakota State Seed Department

## Inside

- 1 Capture the Value of Certified Seed
- 2 From the Commissioner's Desk
- 3 Effects of Frost on Soybean Seed Quality and Storage
- 3 FSA Maps Are Required
- 4 Sampling and Sample Sizes Required for Testing
- 4 Tips for Submitting Seed Samples
- 5 Seed Quality Observations
- 5 Labeling Seed for Interstate Shipment
- 6 Calendar

## Capture the Value of Certified Seed

Steve Sebesta, Director, Field Seed Program

*Quality.* How do you recognize it? How do you measure it? What value do you place on it? Everything has value, some things more than others. When you begin the task of selecting varieties for your farm what do you consider? Some common criteria include brand, product performance, availability and price. But, how about seed quality? Do you consider seed quality when making your seed buying decisions?

Seed quality is perhaps one of the most important factors in your buying decision. All seed is not equal. Plant breeders invest approximately ten years developing new varieties from the time a cross is made until final release. During that time, experimental lines are tested for yield potential in multiple environments, quality characteristics and tolerance to pests. It is an exten-

sive evaluation process in order to bring you new genetics that will provide value to your farm and the agricultural industry. Think of the advances in the last five, 10, 20 or 50 years of plant breeding. Has the genetic contribution to higher yields improved? Undoubtedly! Have you captured the value of those varieties? Purchasing quality seed of proven, adapted varieties is the best way to capture the true value of every variety.

The seed certification process was established to ensure that the attributes selected by the breeder are actually delivered in the seed you purchase. The process was established to ensure an adequate supply of high quality seed through a series of field inspections and laboratory analyses.

**Lets examine why certified seed is a value.**

Value continued on page 2

North Dakota State  
**NDSSD**  
Seed Department

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Certification Manager Joe Magnusson (c) and Galen Briese, Field Seed Specialist (r), discuss a durum seed field with grower Mike Gartner (l).



## From the Commissioner's Desk

Is the wild ride over yet?

The variability and challenges of this growing season seem to be extending into pre-winter. As I write this column it's two hours away from deer season opener, and I know there are a lot of producers on a combine, tractor, or standing next to a grain dryer... everything except sighting in the rifle or out spotting an animal.

Now, it isn't unusual to have corn harvest going at this time of year, but edible beans, soybeans, flax and wheat? All we can do is hope for the best for our growers who are still out plugging away at a harvest that resembles a growing season that has been bizarre, even by North Dakota standards.

Now our focus and concern shifts to seed storage, condition and subsequent performance issues. Early reports suggest variability in physical quality of most seed crops, either very good or poor without a lot in between. Our main concern now lies with the storage of crops harvested in high-moisture conditions, and the risk of good quality seed falling into the marginal or poor range due to storage degradation. While this isn't an uncommon problem, it is one that we can assume much higher odds this year. Low-heat or natural-air drying may present challenges in maintaining the condition of this seed crop, and near-constant management of stored seed lots will be in order over the next few months.

Hopefully, our staff has been responsive in helping overcome some of the challenges of the harvest season. With a relatively high number of applications, especially in soybeans, our staff was pressed to stay out in front of harvest. I hope that our team contributed in a timely manner to easing the stress of the season for you and your business interests.

Best wishes and happy hunting.

Ken Bertsch ..... State Seed Commissioner  
 Steve Sebesta ..... Director, Field Seed Program  
 Steve Marquardt ..... Director, Potato Program  
 James Swanson ..... Seed Regulatory Manager  
 Joe Magnusson ..... Seed Certification Manager  
 Mark Hafdahl ..... Seed Laboratory Manager  
 Jeff Prischmann .... Diagnostic Laboratory Manager  
 Kris Nicklay ..... Administrative Officer  
 Galen Briese ..... Field Seed Specialist  
 Mike Oostewijk ..... Potato Program Supervisor

Value continued from page 1

## FIELD INSPECTED

### ...to ensure genetic identity

The number of generations seed may be used for multiplication is limited, usually to three generations; Foundation, Registered and Certified. This means that certified seed is never more than three generations removed from breeder seed, the purest available. This ensures that the genetic potential that was bred into a variety, the very potential that gives a variety its unique value, is still present in the seed you plant. Certified seed producers must provide proof of genetic identity when they apply for certification. Our staff verifies the identity of every variety in every field prior to acceptance into the certification process. Trained field inspectors then examine each seed field based on the variety characteristics described by the breeder to verify the variety is correct.

### ...to ensure seed purity

Field inspectors also examine seed fields for other factors that affect purity of the seed such as isolation, the presence of other crops or other varieties. They also check for a long list of weeds that can impact the purity of the seed.

Most crops are inspected once prior to harvest. Some crops such as soybeans may be inspected twice to check for flower color or field reaction to herbicide, or in the case of dry edible beans, for incidence of seed-borne diseases such as anthracnose and bacterial blight.

## PROFESSIONALLY CONDITIONED

### ...to ensure proper handling

Field-inspected seed must be conditioned at an approved conditioning facility to ensure its high quality. Annual inspections by the Seed Department ensure that the conditioner has the proper equipment to adequately clean and handle certified seed, maintains a clean facility, and maintains proper records on each lot of seed they condition. Approved seed conditioners and mobile mills are listed in the Seed Directory and the department website. A representative sample of every

conditioned seed lot must be submitted to the seed department for lab analysis.

## LABORATORY TESTED

### ...for purity

Trained seed technologists at the NDSSD examine every conditioned seed lot for physical purity. The purity analysis must be listed on the tag or bulk certificate of every lot of certified seed. Certified seed must meet or exceed minimum standards for purity, generally at least 98%. The percentage of inert matter, other crop seed and weed seed will also be listed on the seed tag.

### ...for germination

Each eligible seed lot is tested for germination before it can be called certified seed. Certified seed must meet or exceed minimum germination standards, usually 85%. Seed lots with high test weight, high germination and seedling vigor will generally yield better than lower quality seed. Germination must be listed on the seed tag or bulk certificate.

### ...for seed-borne diseases

Certain diseases are spread through seed-borne mechanisms, whether in or on seed. In order to control these diseases, every lot of specific crops must be tested. It's another tool to ensure North Dakota certified seed is the best it can be.

Field-inspected seed is not certified until it has been lab tested and approved. Ask for a seed tag or bulk certificate with every seed purchase to make sure you are getting quality seed.

## Success begins with quality certified seed.

When you plan for the next crop year, purchase certified seed. Planting certified seed is the best way to capture the value bred into that variety. Field inspected, professionally conditioned and lab tested, certified seed meets the high expectations of today's successful farmers. Don't leave anything to chance. Demand certified seed for your farm.

*Quality.* It's what distinguishes certified seed from all the rest.

**Certified seed. Invest in quality. Reap the benefits.**

## Effects of Frost on Soybean Seed Quality and Storage

*Steve Sebesta, Director, Field Seed Program*

Many areas of the region were hit by freezing temperatures before crops had reached physiological maturity. Soybeans were particularly hard hit as the majority of the crop was still in the field due to the slow growing season.

Reduced yield and low test-weight are common expressions of an early freeze, but the potential losses extend beyond that. Germination and vigor may also be affected. Storage of green beans that were not properly cleaned or dried before binning can lead to deterioration in the bin. Seed spoilage is usually caused by mold growth and germination can be affected before mold is even detected visually. Proper drying to safe storage moisture is critical.

Immature seed can be stored successfully, but it is important to clean the seed and cool the bins properly. The moisture level of immature seed, weed seed or green plant parts are typically high enough to promote mold growth. Molds will grow first on those wet materials, and as they do they produce moisture and heat, which in turn, promotes additional mold growth in surrounding seed. Keeping bins cool will help decrease the initial infection and spread of molds and will also reduce insect activity. **Check your bins often!**

Producers should be aware that electronic moisture meters may read green or immature beans dryer than they really are. Iowa State University ag engineers suggest adding 1.5 percentage points to readings on these beans for safety.

Germ tests early in the fall may not be a true indicator of the quality of the seed. Our seed lab manager suggests that producers delay germ testing in soybeans until December. They should also request an accelerated aging test to determine the vigor of the seed lot (see "Cold Temperatures Cause Problems" in the September 2004 issue of the *Seed Journal*). Avoid planting low vigor seed in less than ideal conditions next spring.

With proper attention to details now frost damaged seed may be stored reasonably well.

## FSA Maps Are Required

It seems a little premature to be thinking of field inspections for 2005 already, but this topic is important enough that we're going to hit it from now until next summer.

Seed producers applying for field inspection with the North Dakota State Seed Department **MUST include FSA maps** for all fields. Applications will be considered incomplete without proper maps. The boundaries of each seed field must also be clearly identified on the map.

Hand-drawn maps are undesirable because too often they are drawn incorrectly. In addition, FSA maps allow our staff to identify incorrect legal descriptions on the applications. These common errors cause inspectors downtime, which in turn reduces the number of fields they are capable of completing each day and may even cause us to miss your field. Inspection delays ultimately reduce our efficiency and yours. Help us serve you better by including FSA maps next year.

# Sampling and Sample Sizes Required For Testing

Jeff Prischmann, Diagnostic Laboratory Manager

Sampling is an extremely important part of seed testing that can often be overlooked. Seed growers, producers, and conditioners need to pay attention to how samples are taken when submitting them for testing. The most important factor in sampling is obtaining a sample that is representative of the field or seed lot. This can be done in a number of different ways. Probing bags or bins is one way. Usually, several probes are taken and then bulked into a single sample. A portion of this sample can then be submitted for testing. A convenient way to sample is to periodically draw a sample at regular intervals as the seed is going into or out of a bin. These samples can be bulked and mixed together in the same manner as probed samples. Growers should also keep a reference sample on hand as a backup sample.

The importance of having a representative sample to submit for testing cannot be over emphasized. **A seed test is only as good as the quality of the sample submitted.** In fact, the accuracy of some seed health tests is highly dependent upon the sample submitted. For example, bean anthracnose testing is essentially a positive or negative test. One infected seed in a seed lot would classify the sample as contaminated. For best results 1,000 seed should be tested for anthracnose.

The following is a list of sample sizes required by the North Dakota State Seed Department.

## SEED HEALTH TESTS

Anthrachnose (Edible Bean; 2 lb. seed)  
Ascochyta, 500 seed test (Field Pea, Chickpea, Lentils 1 lb. seed)  
Ascochyta, 1,000 seed test (Chickpea; 2 lb. seed)  
Bacterial Blight (Soybean; 5 lb. seed)  
Barley Stripe Mosaic Virus (½ lb. seed)  
Blackleg (Canola; ½ lb. seed)  
Dome Test (Edible Bean; 3 lb. seed)  
Lentil Fungal Scan (½ lb. seed)  
Loose Smut (Barley, Wheat; ½ lb. seed)  
Phomopsis (Soybean; ½ lb. seed)  
Other virus tests (soybean mosaic, bean pod mottle; call)

## HERBICIDE TRAIT/TRANSGENIC TESTS

Roundup® Herbicide Bioassay Test (Soybean; ½ lb. seed)  
Liberty®, Roundup®, or Clearfield® Herbicide Bioassay Test (Canola; ½ lb. seed)  
Lateral Flow Strip GMO presence (Soybean; 1 lb. seed)  
ELISA GMO presence (Soybean; 1 lb. seed)  
PCR qualitative GMO presence (Soybean; 1 lb. seed)

## GENETIC PURITY/VARIETY IDENTIFICATION

Seed Protein Electrophoresis Test (cereals; ½ lb. seed)  
DNA Test (1 lb. seed)

## GERMINATION/PURITY TESTS

Germination Tests:

The minimum size of samples submitted for a germination test shall be at least 800 seed.

Seed Purity Tests:

1. Four ounces of small-seeded grasses, white or alsike clover or seeds of similar size.
2. Eight ounces of sweet clover, red clover, alfalfa, grasses, millet, rape, flax or seed of similar size.
3. One and a half pounds of cereals, soybeans or seed of similar size.

## Tips for Submitting Seed Samples

Rhonda Rabideaux

Follow the steps outlined below to ensure your samples are processed quickly and correctly. Failure to do so will reduce turn-around time.

**When sending in a sample for testing, please be sure to:**

1. Include a return address so we know who to send the results to.
2. Identify the kind, variety, lot number and what tests you want done.
3. Identify field-inspected seed by using the current field application number (e.g. S0412345) — **not** the lot number of the seed that was planted.
4. If we are supposed to send a copy to someone else, or bill someone else, let us know.
5. Submit enough seed for the tests you want done (see *Sampling and Sample Sizes Required For Testing* article in this issue).

**Conditioners — when sending in a sample for final certification, please remember:**

1. We need a sampler's report for each lot (remember — **each bin is a separate lot**).
2. Be sure to fill in the blanks on the sampler's report, especially the field inspection number(s), clean bushels, number of bulk certs requested, who to send them to, who to bill, and any special instructions.
3. If the seed is being re-tested or has been re-conditioned, be sure to provide the certification number from the initial sample.
4. If we are supposed to use a pre-germ, smut, dome, anthracnose or ascochyta test that was previously done for the lot you are submitting, be sure to provide those test numbers so we don't repeat those tests.
5. Fill the plastic bag full and make sure you seal the zip-loc seal as well as the second sticky seal.



## Seed Quality Observations

Mark Hafdahl, Seed Laboratory Manager

The Seed Laboratory has conducted tests on about 1300 samples at this point. While we haven't seen samples from every part of the state, we have seen some trends that are worth noting. The lack of heat units during the growing season and the early frost have caused some very real problems this year.

Soybeans in the northeast quarter of the state in many cases failed to mature resulting in beans that are green and oblong. Generally these beans are dead but could possibly be cleaned out with the right equipment. The pictures below illustrate some of the poorer seed we have observed. We have done some accelerated ageing tests on low quality beans and surprisingly even when the germination test is low the aged beans do almost as well, for example, germination 70%, accelerated ageing 65%. This tells me that those beans that made it to maturity are of good quality. Seed size is smaller than normal and more variable in size.

Wheat in the northeast quarter of the state has some problems too. The crop in many places was harvested late and the seed wasn't dry. This moist fall hasn't helped any either. Aeration with moist air doesn't bring the moisture levels down. What we are seeing in some cases is seed that is dormant even after we have chilled it to break dormancy. I am hopeful that the dormancy issue will go away as the seed is dried. Scab continues to be a problem but levels are not serious, usually less than five percent.

I haven't seen enough samples of other crops to make any generalizations. I would recommend keeping a close eye on stored seed to prevent deterioration. The best advice I can offer is to **get your seed tested before you make decisions.**



green oblong

normal

brown oblong

## Attend the Crop Improvement Association Annual Meeting

You are encouraged to attend the annual meeting of the North Dakota Crop Improvement and Seed Association February 7 and 8, 2005 in Bismarck.

The NDCI&SA is instrumental in the development, production and distribution of new varieties and actively supports research, extension and educational programs throughout the state. Get involved!

## Labeling Seed for Interstate Shipment

Jim Swanson, Seed Regulatory Manager

Labeling seed for interstate shipment often requires more, or different, information than labeling seed to be sold within the state. Seed that is labeled and sold in the same state need only meet the requirements of the state in which it is sold. **Seed that is to be shipped to another state must meet both Federal Seed Act requirements and the requirements of the seed labeling laws of the receiving state.** Seed laws are usually quite similar among states, but there can be differences in test date requirements and noxious or prohibited weed seed requirements.

When submitting seed samples for testing for interstate shipment, request that an "all states noxious" test be conducted on the sample. This will provide information on noxious or prohibited weed seeds that apply in all states. Seed destined for Canada would need to have a "Canadian noxious" test done.

Some states require that the noxious weed statement on the label be represented by a percentage figure or the word "none" even if no noxious weeds are present. Some states require that any presence of noxious weeds be identified, whereas, North Dakota has a trigger level, depending on the type of crop, where the number and kind of noxious weed need to be identified.

**The Federal Seed Act requires that any seed shipped interstate be tested within five months plus the month of test prior to the date of shipment.** If the seed meets the six month requirement based on the shipping date, the test date is then valid for the length of time the receiving state seed law requires.

Specific information on labeling requirements for interstate shipment of seed can be obtained by contacting the North Dakota State Seed Department.

## North Dakota State Seed Department

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# NDSSD Calendar

<b>December 31</b>	License applications due for Approved Conditioners
<b>December 31</b>	License applications due for Bulk Retail Facilities
<b>December 31</b>	License applications due for non-resident seed dealers
<b>January 5-6</b>	Lake Region Extension Roundup, Devils Lake
<b>January 10-11</b>	Dakota Grain Conference and International Durum Forum, Bismarck
<b>January 20-21</b>	Bean Day, Fargo
<b>January 23-24</b>	N.D. Grain Dealers Association, Bismarck
<b>January 26-28</b>	KMOT Ag Expo, Minot
<b>February 7-8</b>	N.D. Crop Improvement and Seed Association Annual Meeting, Bismarck
<b>February 15-16</b>	KFYR Agri-International, Bismarck

**Stop by our booth and visit.**